



Special Section on Foundations of Coordination Languages and Software Architectures (Selected Papers from FOCLASA'10)

Mohammad Reza Mousavi, Gwen Salaün

► To cite this version:

Mohammad Reza Mousavi (Dir.). Special Section on Foundations of Coordination Languages and Software Architectures (Selected Papers from FOCLASA'10). Mousavi, Mohammad Reza; Salaün, Gwen. Elsevier, 80(A), 2014, Science of Computer Programming, 10.1016/j.scico.2012.03.003 . hal-00919799

HAL Id: hal-00919799

<https://inria.hal.science/hal-00919799>

Submitted on 17 Dec 2013

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Preface: Special Section on Foundations of Coordination Languages and Software Architectures (Selected Papers from FOCLASA'10)

This section contains extended versions of selected papers from the 9th International Workshop on the Foundations of Coordination Languages and Software Architectures (FOCLASA'10).

Computer systems combining concurrent, distributed, mobile and heterogeneous components are omnipresent and managing the complexity of their interaction raises challenging problems for system designers and integrators. Coordination languages and software architectures are recognised as fundamental approaches to tackle these problems, improving software productivity, enhancing maintainability, advocating modularity, promoting reusability, and leading to systems that are more tractable and more amenable to analysis, validation and verification.

The objective of the FOCLASA workshops is to bring together researchers and practitioners of the aforementioned fields, in order to share and identify common problems, and to devise general solutions in the contexts of coordination languages and software architectures. FOCLASA'10 was the 9th edition in this series of workshops and was held in Paris (France) on the 4th of September, 2010.

From the eight research papers that were presented at FOCLASA'10, an initial selection of papers was made by the Program Committee, and their authors were invited to submit an extended version to this special section. These extended papers went through a rigorous peer review process; the revised versions of two papers were finally accepted and are included in this special section. We believe that the papers presented here provide key insights into different aspects (quality of service, compositionality, fault-tolerance) of coordination and interaction in concurrent, mobile and distributed systems.

The first article in this special section, “*A Compositional Model to Reason about end-to-end QoS in Stochastic Reo Connectors*”, by Young-Joo Moon *et al.*, presents a compositional semantics for the channel-based coordination language Reo that enables the analysis of quality of service (QoS) properties of service compositions. The authors also propose Stochastic Reo Automata as an extension of Reo automata, in order to compositionally derive a QoS-aware semantics for Reo. A translation of Stochastic Reo Automata to Continuous-Time Markov Chains (CTMCs) is presented in order to allow the use of third-party CTMC verification tools to carry out an end-to-end performance analysis of service compositions. Finally, this article discusses to what extent Interactive Markov Chains (IMCs) can serve as an alternative semantic model for Stochastic Reo.

The second article, “*Formal Development of Wireless Sensor-Actor Networks*”, by Maryam Kamali *et al.*, presents a model of a distributed recovery algorithm in Event-B that addresses the Wireless Sensor and Actor Network (WSAN) partitioning problem caused by actor node failures. They prove, via refinement, that this distributed algorithm is correct and that it terminates in

a finite number of steps. Proofs are carried out using the RODIN platform, an integrated development framework for Event-B. This article also proposes a generalisation of the formal development strategy, which can be reused in the context of a wider class of networks by using the notions of refinement patterns and pattern-driven formal development.

Many people have contributed to this special section, without whose effort this special section would not have been possible. Besides the authors of the papers, we would like to thank the members of the Program Committee of the workshop: Farhad Arbab (CWI, The Netherlands), Luis Barbosa (University of Minho, Portugal), Antonio Brogi (University of Pisa, Italy), Carlos Canal (University of Málaga, Spain), Vittorio Cortellessa (University of L'Aquila, Italy), Gregor Goessler (Inria, France), Ludovic Henrio (Inria, France), Jean-Marie Jacquet (University of Namur, Belgium), Alexander Knapp (University of Augsburg, Germany), Ronaldo Menezes (Florida Institute of Technology, USA), Ernesto Pimentel (University of Málaga, Spain), Pascal Poizat (University of Evry, France), Jaco van de Pol (University of Twente, The Netherlands), Antonio Ravara (Technical University of Lisbon, Portugal), Marjan Sirjani (Reykjavik University, Iceland), Carolyn Talcott (SRI International, USA), Emilio Tosto (University of Leicester, UK), Mirko Viroli (University of Bologna, Italy), Danny Weyns (Katholieke Universiteit Leuven, Belgium), Erik de Vink (Eindhoven University of Technology, The Netherlands). Our thanks go also to the anonymous referees who kindly agreed to help us with the selection and reviewing of the papers in this special section and carried out an excellent job during this lengthy and laborious process.

Mohammad Reza Mousavi
Eindhoven University of Technology, The Netherlands

Gwen Salaün
Grenoble INP, Inria, France
Program Committee Chairs